I. AMENDMENTS

Amendments to the Claims:

This listing of all pending claims (including withdrawn claims) will replace all prior versions, and listings, of claims in the application. Cancelled and not entered claims are indicated with claim number and status only. The claims show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Listing of Claims:

1. (Original) An optical transmission system which transports optical signals over an optical transmission line, comprising:

(a) an optical transmitter, comprising:

an optical amplifier that amplifies main signals, and

an optical amplifier controller that starts up said optical amplifier, spending a first predetermined time to raise output power of said optical amplifier up to a desired level, in order to prevent an OSC signal from experiencing abrupt power variations; and

(b) an optical receiver, comprising:

a pump light source that produces a pump beam for injection to the fiber-optic transmission line so as to make the fiber-optic transmission line serve as an amplifying medium, and

a pump light source controller that starts up said pump light source, spending a second predetermined time to raise the pump beam to a desired power level, in order to prevent the OSC signal from experiencing abrupt power variations.

2. (Original) The optical transmission system according to claim 1, further comprising a variable optical attenuator disposed before said optical amplifier to vary input signal level thereof, wherein:

said optical amplifier is controlled in both automatic level control (ALC) and automatic gain control (AGC) modes;

said optical amplifier controller controls said optical amplifier in the ALC mode to raise

the output power thereof from zero level; and

after said optical amplifier has moved into the AGC mode, said optical amplifier controller controls the input signal level of said optical amplifier by varying attenuation level of said variable optical attenuator, thereby controlling the output power of said optical amplifier.

3. (Original) The optical transmission system according to claim 1, further comprising a variable optical attenuator disposed before said optical amplifier in said optical transmitter to vary input signal level thereof, wherein:

said optical amplifier is controlled in AGC mode; and

said optical amplifier controller first sets a maximum attenuation level to said variable optical attenuator and then gradually reduces the attenuation level, thereby increasing the output power of said optical amplifier in a stepwise fashion.

4. (Original) The optical transmission system according to claim 1, wherein:

said pump light source controller comprises a timer with a predetermined time constant that is enabled when the optical transmission system starts to operate; and

said pump light source controller starts to raise the pump beam in a stepwise fashion after said timer has expired, whereby said pump light source starts up later than said optical amplifier.

5. (Original) The optical transmission system according to claim 1, wherein:

said optical amplifier controller comprises a timer with a predetermined time constant that is enabled when the optical transmission system starts to operate; and

said optical amplifier controller starts to raise the output power of said optical amplifier in a stepwise fashion after said timer has expired, whereby said optical amplifier starts up later than said pump light source.

6. (Original) The optical transmission system according to claim 1, wherein:

said optical transmitter sends a downstream OSC signal to said optical receiver to indicate that said optical amplifier controller has finished raising the output power of said optical amplifier; and

said pump light source controller starts to raise the pump beam in a stepwise fashion upon receipt of the downstream OSC signal.

7. (Original) The optical transmission system according to claim 1, wherein:

said optical receiver sends an upstream OSC signal to said optical transmitter to indicate that said pump light source controller has finished raising the pump beam; and

said optical amplifier controller starts to raise the output power of said optical amplifier in a stepwise fashion upon receipt of the upstream OSC signal.

8. (Original) The optical transmission system according to claim 1, wherein said optical amplifier controller and said pump light source controller respectively start up said optical amplifier and said pump light source in an interactive way, communicating each other's ongoing process status by sending OSC signals back and forth.

9. (Original) The optical transmission system according to claim 1, wherein:

said optical receiver comprises a monitoring controller that watches at least one of main signal power and OSC signal power;

said optical receiver sends an upstream OSC signal to notify said optical transmitter of monitoring results of said monitoring controller; and

based on the monitoring results received from said optical receiver, said optical amplifier controller calculates control step parameters for use in raising the output power of said optical amplifier in a stepwise fashion.

10. (Original) The optical transmission system according to claim 1, wherein:

said optical receiver comprises a monitoring controller that watches at least one of main signal power and OSC signal power; and

based on monitoring results of said monitoring controller, said pump light source controller calculates control step parameters for use in raising the pump beam in a stepwise fashion.

11. (Original) The optical transmission system according to claim 1, wherein said

optical transmitter and said optical receiver each comprise a mask time setting unit that defines and uses a mask time in checking incoming OSC signals in such a way that a substantial OSC error is detected only when OSC signal faults continue for a period longer than the mask time.

12. (Original) The optical transmission system according to claim 1, wherein said optical amplifier controller calculates control step parameters from the desired level of said optical amplifier when raising the output power in a stepwise fashion.

13. (Original) The optical transmission system according to claim 1, wherein:

said optical amplifier controller comprises a memory that stores control step parameters to achieve the desired level of said optical amplifier; and

said optical amplifier controller reads out the control step parameters from said memory when raising the output power of said optical amplifier in a stepwise fashion.

14. (Original) The optical transmission system according to claim 1, wherein said pump light source controller calculates control step parameters from the desired power level of the pump beam when raising the pump beam in a stepwise fashion.

15. (Original) The optical transmission system according to claim 1, wherein:

said pump light source controller comprises a memory that stores control step parameters to achieve the desired power level of the pump beam; and

said pump light source controller reads out the control step parameters from said memory when raising the pump beam in a stepwise fashion.

16. (Original) An optical transmission system which transports optical signals between upstream and downstream stations over an optical transmission line, each station comprising:

an optical amplifier that amplifies main signals;

an optical amplifier controller that starts up said optical transmitter, spending a first predetermined time to raise output power of said optical amplifier up to a desired level, in order to prevent an OSC signal from experiencing abrupt power variations;

a pump light source that produces a pump beam for injection to the fiber-optic transmission line so as to make the fiber-optic transmission line serve as an amplifying medium; and

a pump light source controller that starts up said pump light source, spending a second predetermined time to raise the pump beam to a desired power level, in order to prevent the OSC signal from experiencing abrupt power variations.

17. (Original) The optical transmission system according to claim 16, further comprising a variable optical attenuator disposed before said optical amplifier to vary input signal level thereof, wherein:

said optical amplifier is controlled in both ALC and AGC modes;

said optical amplifier controller controls said optical amplifier in the ALC mode to raise the output power thereof from zero level; and

after said optical amplifier has moved into the AGC mode, said optical amplifier controller controls the input signal level of said optical amplifier by varying attenuation level of said variable optical attenuator, thereby controlling the output power of said optical amplifier.

18. (Original) The optical transmission system according to claim 16, further comprising a variable optical attenuator disposed before said optical amplifier to vary input signal level thereof, wherein:

said optical amplifier is controlled in AGC mode; and

said optical amplifier controller first sets a maximum attenuation level to said variable optical attenuator and then gradually reduces the attenuation level, thereby increasing the output power of said optical amplifier in a stepwise fashion.

19. (Original) The optical transmission system according to claim 16, wherein:

said pump light source controller comprises a timer with a predetermined time constant that is enabled when the optical transmission system starts to operate; and

said pump light source controller starts to raise the pump beam in a stepwise fashion after said timer has expired, whereby said pump light source in the downstream station starts up later than said optical amplifier in the upstream station.

20. (Original) The optical transmission system according to claim 16, wherein:

said optical amplifier controller comprises a timer with a predetermined time constant that is enabled when the optical transmission system starts to operate; and

said optical amplifier controller starts to raise the output power of said optical amplifier in a stepwise fashion after said timer has expired, whereby said optical amplifier in one station starts up later than said pump light source in the other station.

21. (Original) The optical transmission system according to claim 16, wherein:

said optical amplifier controller in the upstream station sends a downstream OSC signal to the downstream station to indicate that said optical amplifier controller has finished raising the output power of said optical amplifier; and

in the downstream station, said pump light source controller starts to raise the pump beam in a stepwise fashion upon receipt of the downstream OSC signal.

22. (Original) The optical transmission system according to claim 16, wherein:

said pump light source controller in the downstream station sends an upstream OSC signal to the upstream station to indicate that said pump light source controller has finished raising the pump beam; and

in the upstream station, said optical amplifier controller starts to raise the output power of said optical amplifier in a stepwise fashion upon receipt of the upstream OSC signal.

23. (Original) The optical transmission system according to claim 16, wherein said optical amplifier controller and said pump light source controller in the upstream and downstream stations respectively start up said optical amplifier and said pump light source in an interactive way, communicating each other's ongoing process status by sending OSC signals back and forth.

24. (Original) The optical transmission system according to claim 16, wherein:

each station further comprises a monitoring controller that watches at least one of main signal power and OSC signal power;

the downstream station sends an upstream OSC signal to notify the upstream station of monitoring results of said monitoring controller; and

in the upstream station, said optical amplifier controller calculates control step parameters, based on the monitoring results received from the downstream station, for use in raising the output power of said optical amplifier in a stepwise fashion.

25. (Original) The optical transmission system according to claim 16, wherein:

each station further comprises a monitoring controller that watches at least one of main signal power and OSC signal power; and

said pump light source controller calculates control step parameters, based on monitoring results provided by said monitoring controller, for use in raising the pump beam in a stepwise fashion.

26. (Original) The optical transmission system according to claim 16, wherein each station further comprises a mask time setting unit that defines and uses a mask time in checking incoming OSC signals in such a way that a substantial OSC error is detected only when OSC signal faults continue for a period longer than the mask time.

27. (Original) The optical transmission system according to claim 16, wherein said optical amplifier controller calculates control step parameters from the desired level of said optical amplifier when raising the output power in a stepwise fashion.

28. (Original) The optical transmission system according to claim 16, wherein:

said optical amplifier controller comprises a memory that stores control step parameters to achieve the desired level of said optical amplifier; and

said optical amplifier controller reads out the control step parameters from said memory when raising the output power of said optical amplifier in a stepwise fashion.

29. (Original) The optical transmission system according to claim 16, wherein said pump light source controller calculates control step parameters from the desired power level of the pump beam when raising the pump beam in a stepwise fashion.

30. (Original) The optical transmission system according to claim 16, wherein:

said pump light source controller comprises a memory that stores control step parameters to achieve the desired power level of the pump beam; and

said pump light source controller reads out the control step parameters from said memory when raising the pump beam in a stepwise fashion.

31. (Withdrawn) A method of suppressing temporary OSC signal errors, comprising the steps of:

starting up an optical amplifier, spending a first predetermined time to raise output power of the optical amplifier up to a desired level, in order to prevent an OSC signal from experiencing abrupt power variations, wherein the optical amplifier is a device that amplifies main signals; and

starting up a pump light source, spending a second predetermined time to raise a pump beam to a desired power level, in order to prevent the OSC signal from experiencing abrupt power variations, wherein the pump light source is a device that produces the pump beam for injection to a fiber-optic transmission line so as to make the fiber-optic transmission line serve as an amplifying medium.

32. (Withdrawn) The method according to claim 31, wherein said steps of starting up the optical amplifier and pump light source are executed at different times.